



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,725	06/26/2003	Anthony P. Ewing	9129.109	2573
36412	7590	08/31/2005	EXAMINER	
DUCKOR SPRADLING METZGER			SMITH, RUTH S	
401 WEST A STREET, SUITE 2400			ART UNIT	
SAN DIEGO, CA 92101-7915			PAPER NUMBER	

3737

DATE MAILED: 08/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,725

Applicant(s)

EWING ET AL.

Examiner

Ruth S. Smith

Art Unit

3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Drawings

The drawings were received on May 9, 2005. These drawings are acceptable.

Specification

The disclosure is objected to because of the following informalities: On page 1 of the specification Application Serial No. 10/609,259 should be inserted. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5,9,21-24,37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoenig in view of Jonsen. Hoenig discloses a patient table comprising all of the claimed subject matter (including a headrest inherently having a radius of curvature in the claimed range) (see fig. 1) except that the table is not portable in the sense that it is not disclosed as being movable along the ground and is hooked up to a refrigerant pipeline (19) underneath (see fig. 2). Jonsen discloses a portable SQUID including a DC power source (16) and electronics (18) and refrigerant container (14) all enclosed within a portable, RF shielded box (12). See col. 2 lines 20-26 and claim 1. It would have been obvious at the time the invention was made to a person of ordinary skill in the art to replace the bulky, tethered SQUID of Hoenig with the self-contained, portable dc SQUID of Jonsen for self evident reasons and due to the nature of the problem being solved - wherein a patient having their head examined in an emergency situation (such as head trauma), and is unable to walk, needs to be as ambulatory as possible. It would have additionally been obvious to make the table movable because making an old object "portable" or "movable" is well established by

the courts to have been obvious to one of ordinary skill in the art. See MPEP 2144.04 (V)(A).

Claims 1-9,16,17,37,38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoenig in view of Dilorio et al. Hoenig discloses a patient table, or "cart," comprising all of the claimed subject matter (see fig. 1) except that the table is not portable in the sense that it is not disclosed as being movable along the ground and is hooked up to a refrigerant pipeline (19) underneath (see fig. 2). Dilorio et al. teaches a disconnectable (56) refrigerant supply line (72) enabling free movement of magnetic field pick-up coils (col. 10 lines 5-8). It would have been obvious at the time the invention was made to a person of ordinary skill in the art to replace the refrigerant pipeline of Hoenig with the flexible supply line of Dilorio et al. to provide easier access to, and connection/disconnection of, the supply line to a (e.g., backup) refrigerant source in the event of depletion or malfunction (Dilorio et al., col. 10 lines 8-14. In addition, it would have been obvious at the time the invention was made to a person of ordinary skill in the art to make the table and flexible supply line as taught by Hoenig in view of Dilorio et al. "portable" or "movable" as is well established by the courts (see MPEP 2144.04 (V)(A)) and due to the nature of the problem being solved (see paragraph 7 above). Regarding claims 2-4, it is inherent that the universal head support of Hoenig falls within the claimed range. Alternatively, it would have been obvious at the time the invention was made to a person of ordinary skill in the art to replace the sensor support of Hoenig with the conformable/adjustable sensor support (16) of Dilorio et al. so as to maintain close contact with persons of different sized heads (e.g., fig. 16, col. 14 lines 8- 25) and thereby obtain higher resolution and improved signal-to-noise ratio (col. 9 lines 65-68). Regarding claims 5 and 9, the head support of Hoenig inherently meets the claimed limitations. Regarding claim 6, the support structure of Dilorio is composed of an insulating and structurally strong material such as fiberglass (functionally equivalent to G-10 fiberglass) as is commonly used (col. 5 line 65 - col. 6 line 17). It would have been obvious at the time the invention was made to a person of ordinary skill in the art to use a fiberglass support as taught by Dilorio et al. in the invention as taught by Hoenig as is well established in the art. Regarding claims 7 and

8, Hoenig differs in that a spacing of 1-3 mm between the sensors and the outer head engaging portion of the headrest is not specifically addressed. Dilorio et al. disclose wherein the support structure has a series of hollowed-out portions (fig. 13) so that the coils are separated from the outer head engaging surface by only a thin polymeric material (240) such as Mylar or cloth (col. 12 lines 11-15) (impliedly 1-3 mm). It would have been obvious at the time the invention was made to a person of ordinary skill in the art to arrange the sensors of Hoenig as close to the support as possible as taught by Dilorio et al. so as to achieve higher resolution and improved signal to noise ratio (col. 9 lines 65-69). Regarding claims 16 and 17, Hoenig differs in that a headrest having recesses in the rear surface thereof for the sensors is not specifically addressed. Dilorio et al. teaches a support structure having a series of recesses (i.e., holes or hollowed out portions) in a rear surface thereof for receiving the sensors (5g. 13, 15, 16). It would have been obvious at the time the invention was made to a person of ordinary skill in the art to provide a corresponding receiving space in for the detectors (24) of Hoenig as taught by Dilorio et al. to provide isolation and stability for the sensors while allowing them to be placed as close to the patient as possible. Regarding claim 38, Hoenig differs from the claimed invention in that the step of moving the sensors (24) relative to the headrest is not specifically addressed. Dilorio et al. teaches a structure (16) for slidably holding sensors (12) adjacent to the head in an adjustable fashion (e.g., using spring bias) so as to maintain close contact with persons of different sized heads (fig. 16, col. 14 lines 8-25) and thereby obtain higher resolution and improved signal-to-noise ratio (col. 9 lines 65-68). It would have been obvious at the time the invention was made to a person of ordinary skill in the art to provide spring-biased, movable sensors in the invention of Hoenig as taught by Dilorio et al. for the above described reasons.

Claims 10-15, 20 and 25-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoenig in view of Dilorio et al. and further in view of Yokosawa et al. Regarding claims 10-15, Hoenig and Dilorio et al. differ from the claimed invention in that a pick-up coil having a small diameter and inter-coil spacing on the order of a few millimeters is not specifically addressed (even though Dilorio et al. discloses thin film pick-up coils disposed on a substrate fig. 8-10). Yokosawa et al. teach an integrated-

type dc SQUID magnetometer having as many as 200 sensors disposed about the head (fig. 6, col. 5 lines 8-21). Although Yokosawa et al. does not explicitly set forth the coil diameters and spacing, it is implied that they are on the order of a few millimeters or less with the use of 200 sensors - since it is disclosed that the substrate itself is around 30 x 40mm (col. 3 lines 10-14) as well as by virtue of the surface area of the patient's head itself. It would have been obvious at the time the invention was made to a person of ordinary skill in the art to replace the sensor coils of Hoenig in view of Dilorio et al. with the even smaller and more compact integrated-type SQUID magnetometer devices of Yokosawa et al. to form a lightweight, cost-effective, and densely aggregated Magnetometer with improved spatial resolution. Further regarding claim 20, Hoenig and Dilorio et al. differ from the claimed invention in that sensors arranged in groups of four are not addressed. Yokosawa et al. demonstrates an integrated-type dc SQUID magnetometer having sensing coils arranged in groups of four (see fig. 9 and col. 5 line 67 - col. 10 line 7). Dilorio et al. further demonstrate where it is known to subtract signals (223) to obtain different measurements (col. 11 lines 62-65). It would have been obvious at the time the invention was made to a person of ordinary skill in the art to arrange the sensors of Hoenig in view of Dilorio in groups of four as taught by Yokosawa et al. to improve signal acquisition time and allow manipulation of adjacent signals as is well known in the art. Furthermore, at the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to use groups of four sensors since applicant has not disclosed that such a number of sensors provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art furthermore, would have expected Applicant's invention to work equally well with single or paired sensors as taught by Hoenig in view of Dilorio et al. since all are able to adequately obtain magnetoencephalography signals. Regarding claims 25-28 and 33, Hoenig discloses a concave headrest for a magnetoencephalography system. Dilorio et al disclose a conformable/adjustable structure (16) supporting a plurality of sensors (12) and providing close contact with variably shaped/sized heads (taking on the radius of curvature of the head placed in it) so as to obtain high-resolution signals (col. 9 lines 65- 69, col. 14 lines 13-25). It would have been obvious at the time the invention was made to a person of ordinary skill in

the art to use the conformable/adjustable sensor support with multiple sensors as taught by Dilorio et al. in the invention as taught by Hoenig so as to obtain as close contact as possible with the sensor coils thereby obtaining high resolution signals. It would have further been obvious at the time the invention was made to a person of ordinary skill in the art to replace the sensor coils of Hoenig in view of Dilorio et al. with the even smaller and more compact integrated-type SQUID magnetometer devices of Yokosawa et al. to form a lightweight, cost-effective, and densely aggregated magnetometer with "ultra" high spatial resolution. Further regarding claims 29 and 30, the support structure of Dilorio is composed of an insulating and structurally strong material such as fiberglass (functionally equivalent to G-10 fiberglass) as is commonly used (col. 5 line 65 - col. 6 line 17). It would have been obvious at the time the invention was made to a person of ordinary skill in the art to use a fiberglass support as taught by Dilorio et al. in the invention as taught by Hoenig as is well established in the art. Regarding claims 31 and 32, Hoenig differs in that a spacing of 1-3 mm between the sensors and the outer head engaging portion of the headrest is not specifically addressed. Dilorio et al. disclose wherein the support structure has a series of hollowed-out portions (fig. 13) so that the coils are separated from the outer head engaging surface by only a thin polymeric material (240) such as Mylar or cloth (col. 12 lines 11-15) (impliedly 1-3 mm). It would have been obvious at the time the invention was made to a person of ordinary skill in the art to arrange the sensors of Hoenig as close to the support as possible as taught by Dilorio et al. so as to achieve higher resolution and improved signal to noise ratio (col. 9 lines 65-69). Regarding claims 34-36, Hoenig and Dilorio et al. differ from the claimed invention in that a pick-up coil having a small diameter and inter-coil spacing on the order of a few millimeters is not specifically addressed (although Dilorio et al. discloses thin film pick-up coils disposed on a substrate fig. 8-10). Yokosawa et al. teach an integrated-type dc SQUID magnetometer having as many as 200 sensors disposed about the head (fig. 6, col. 5 lines 8-21). Although Yokosawa et al. does not explicitly set forth the coil diameters and spacing, it is implied that they are on the order of a few millimeters or less with the use of 200 sensors - since it is disclosed that the substrate itself is around 30 x 40mm (col. 3 lines 10-14) as well as by virtue of the surface area of the patient's head itself. It would have been obvious at the time the

invention was made to a person of ordinary skill in the art to replace the sensor coils of Hoenig in view of Dilorio et al. with the smaller and more compact integrated-type SQUID magnetometer devices of Yokosawa et al. to form a more lightweight, cost-effective, and densely aggregated magnetometer with improved resolution.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoenig in view of Dilorio et al. and further in view of Zanakakis et al. Hoenig and Dilorio et al. differ from the claimed invention in that a honeycomb configuration is not specifically addressed. In the same field of endeavor, Zanakakis et al. demonstrates that such a configuration (17) is well known to shield, and reduce vibration between, sensors (col. 7 lines 28-43). It would have therefore been obvious at the time the invention was made to a person of ordinary skill in the art to arrange the sensors of Hoenig in view of Dilorio et al. in a honeycomb configuration as is well known in the art and for the above described reasons.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoenig in view of Dilorio et al. and further in view of Zanakakis et al. in view of Yokosawa et al. as applied to claims 18 and 20 above.

Response to Arguments

Applicant's arguments filed May 9, 2005 have been fully considered but they are not persuasive. Applicant's arguments regarding the use of helium or nitrogen gas are noted, however, the fact that each reference uses a different type of gas does not preclude the modification of the Hoenig et al reference to make it portable in view of the secondary teachings. If the portability requires that a different type of gas be used then one skilled in the art would recognize that Hoenig must be modified to use nitrogen gas rather than helium to provide portability.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

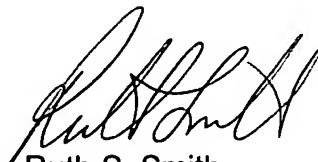
§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ruth S. Smith whose telephone number is 571-272-4745. The examiner can normally be reached on M-F 7:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ruth S. Smith
Primary Examiner
Art Unit 3737